MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow eco Changes

Mitsubishi Programmable Controller
High Speed Data Logger Module Quick Start Guide

Let's Start Logging Data!

Speedy problem analysis at all stages starting
from data sampling to report creation

contents

Introduction P.1

Functions of the high speed data logger module P.2

Operation of the high speed data logger module P.3

Preparation P.4
Preparing for operation

CASE1 P.7
Logging data before and after trigger occurrence

CASE2 P.16
Creating reports from continuously logged data

Introduction

This Quick Start Guide explains the basic procedures for first-time users of the high speed data logger module.

Quick Start Guide

- Functions of the high speed data logger module
- Operation of the high speed data logger module
- Logging data and creating reports

Precautions

Thoroughly read "SAFETY PRECAUTIONS" found in the QCPU User's Manual before using programmable controllers. Please pay careful attention to safety and handle the products properly.

Related manuals

The following manuals are related to the products introduced in this guide.

- High Speed Data Logger Module User's Manual SH-080818ENG
- GX LogViewer Version1 Operating Manual SH-080915ENG
- QCPU User's Manual (Hardware Design, Maintenance and Inspection) SH-080483ENG
- GX Developer Version8 Operating Manual SH-080373E
- GX Works2 Version1 Operating Manual (Common) SH-080779ENG

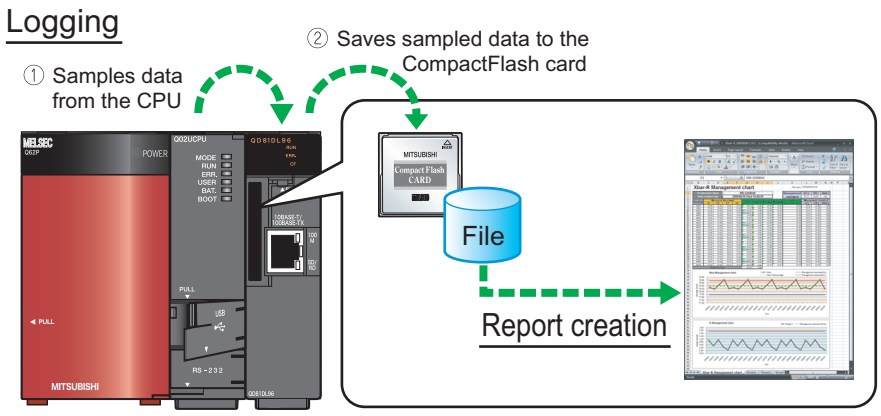
How to read this guide

The following table shows the symbols used in this guide with descriptions and examples.

Symbol	Description	Example
Remark	Remarks	When using the report creation function, the data logging file format must be set to "Binary file".
[ ]	Menu names on the menu bar ([ ] → [ ] indicates drop-down menus.)	Select [Online] → [Transfer Setup].
	Buttons on the screen	Click the OK button.

Functions of the high speed data logger module

The high speed data logger module is a module that logs (records and saves) sampled programmable controller CPU data and saves them to a CompactFlash card as a file. Reports can be created from the logged file in Excel format.



Functions

'Data logging', 'Event logging', and 'Report' are the three major functions of the high speed data logger module.

Data logging	:	A function to log programmable controller CPU data at the specified data sampling interval.
Event logging	:	A function to monitor data sampled from the programmable controller CPU and log occurred events.
Report	:	A function to create reports with values and graphs obtained from data logging files and data sampled by the programmable controller CPU. The Excel layout for the report needs to be configured in advance.

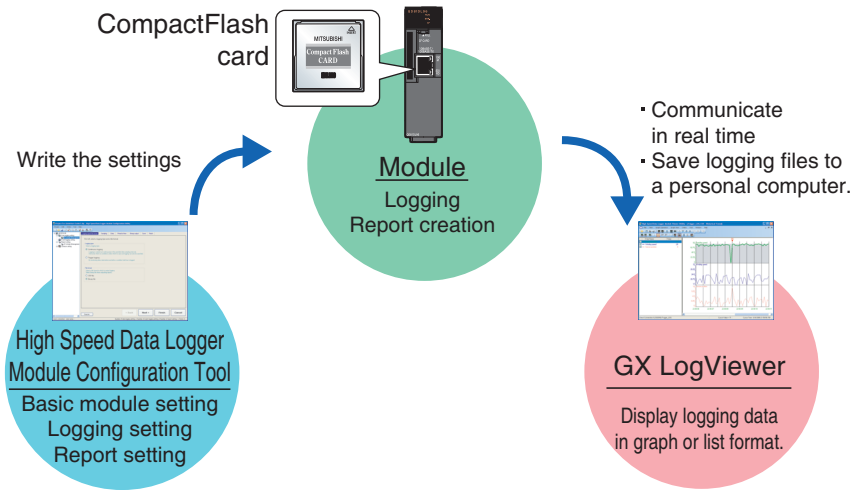
The following are the two data logging methods:

Continuous logging	:	Continuously logs data at the specified data sampling interval, and creates data logging files.
Trigger logging	:	Logs data before and after the trigger occurrence (establishment of specified condition), and creates data logging files.

High speed data logger module and relevant tools

The following are the relevant tools of high speed data logger module.

- 'High Speed Data Logger Module Configuration Tool' to configure settings of high speed data logger module.
- 'GX LogViewer' to display logged data.

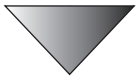


Operation of the Operating high speed data logger module

Use this guide to understand the operation of the high speed data logger module by actually configuring the 'trigger logging', 'continuous logging', and 'report' settings.

Descriptions in this guide

Page	Description
Preparation P4-	**Preparing for operation** This section explains equipment used in this guide and the system configuration.

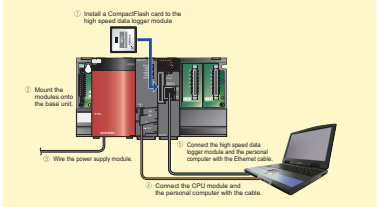


Page	Introduced function	Description
CASE 1 P7-	Trigger logging	**Logging data before and after trigger occurrence** This section uses an example to explain the trigger logging function and how to confirm logged data.
CASE 2 P16-	Continuous logging report	**Creating reports from continuously logged data** This section uses an example to explain the continuous logging function and report creation.

Preparing for operation

This section describes the preparation for operations instructed in CASE 1 and CASE 2.

STEP 1 Preparing equipment


STEP 2 System configuration

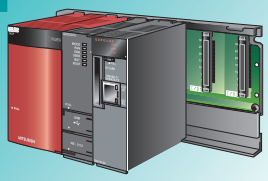
STEP 1 Preparing equipment

Prepare the equipment and software needed in CASE 1 and CASE 2.

Items to prepare

High speed data logger module
<QD81DL96>

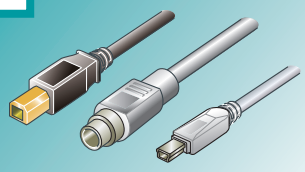
CompactFlash card
(QD81MEM- □□□□BC)

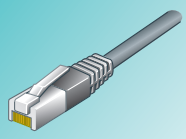

[Q series] CPU module,
power supply module, base unit

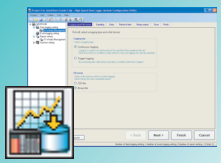
Personal computer(Windows® XP/
Windows Vista®/Windows® 7)
* Supported with 32-bit editions only

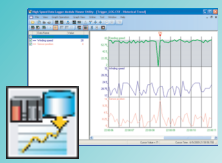
GX Works2 or GX Developer

Excel 2003 or 2007


USB cable or RS-232C cable
(For connecting personal computer and
programmable controller CPU module)


Ethernet crossing cable
(For connecting personal computer and
high speed data logger module)


High Speed Data Logger
Module Configuration Tool
☞ Preparing High Speed Data Logger
Module Configuration Tool


GX LogViewer
☞ Preparing GX LogViewer

Sample data for
Quick Start Guide
☞ Preparing sample data for
the Quick Start Guide

Preparing High Speed Data Logger Module Configuration Tool

For the acquisition of High Speed Data Logger Module Configuration Tool, contact your local Mitsubishi representative.

Please install the acquired tool.

Preparing GX LogViewer

For the acquisition of GX LogViewer, contact your local Mitsubishi representative.

Please install the acquired tool.

Preparing sample data for the Quick Start Guide

To obtain the sample data used in CASE 1 and CASE 2 in this guide, contact your local Mitsubishi representative.

Files included in sample data

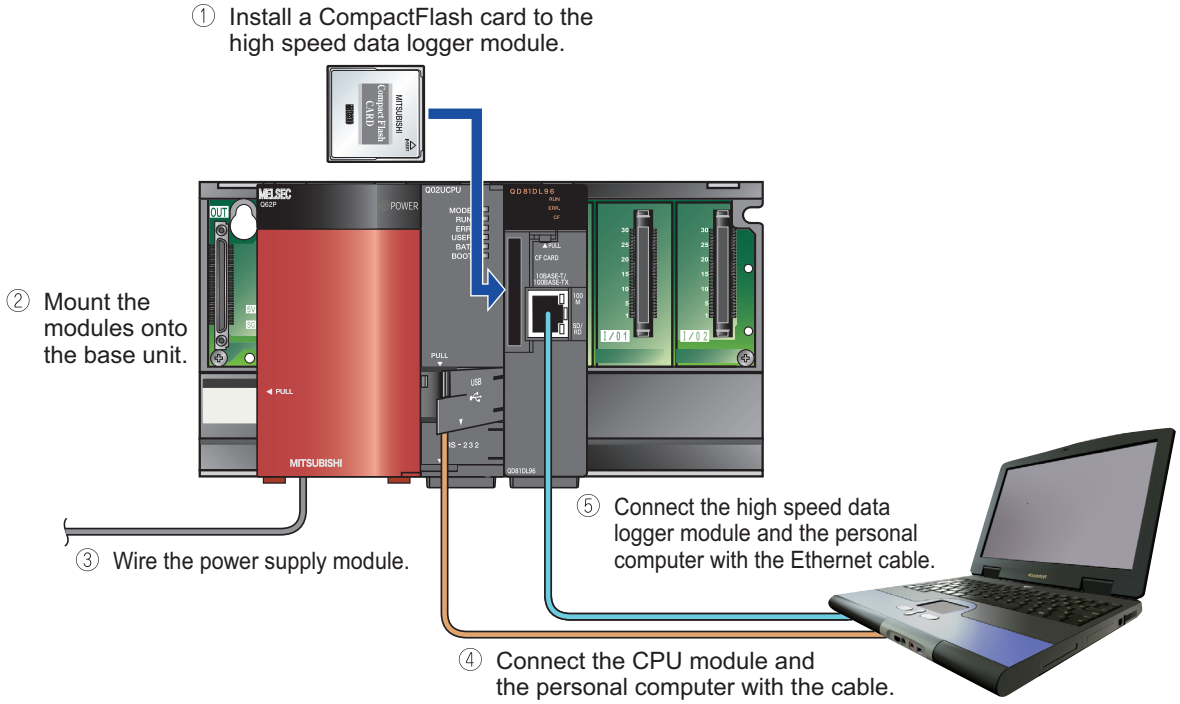
- Sequence program (l08147eng-program_a): A GX Developer project file to be used in CASE 1 and CASE 2.
- Layout file (l08147eng-layout_a.xls): An Excel format file for report to be used in CASE 2.
- Logging result file (l08147eng-CASE1_a.CSV): A CSV file whose data are logged according to the procedure in CASE 1.

STEP 2 System configuration

Configure the programmable controller system used in CASE 1 and CASE 2.

STEP 2-1 Mounting and wiring modules

Follow the instructions in order from ① to ⑤ .



STEP 2-2 Activating the system

① Power ON the power supply module.

② Write the sequence program (l08147eng-program_a) to the CPU module using GX Developer or GX Works2.

③ Switch the mode of the CPU module to 'RUN'.

Precautions

The instructions in this guide are described according to the above programmable controller system configuration.

When designing and operating an actual system, read the manuals listed on the following page.

☞ Related manuals (P. 1)

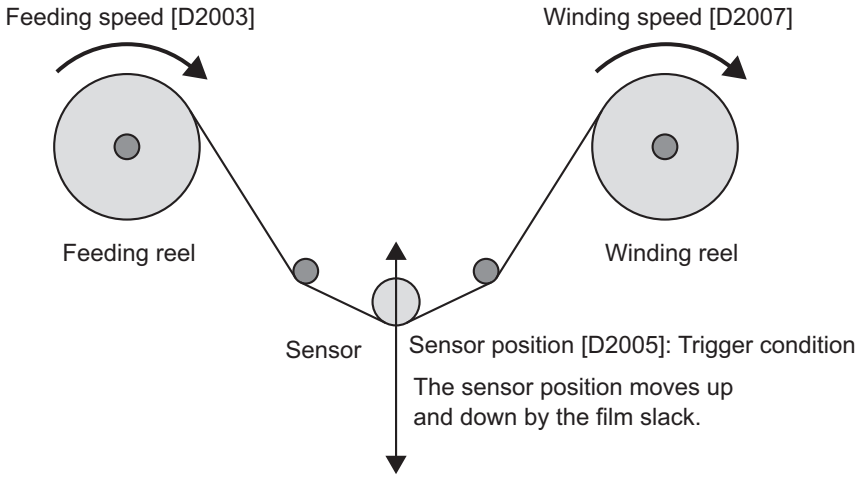
CASE 1 Logging data before and after trigger occurrence

This section explains how to perform the 'trigger logging' function using the equipment shown in the figure below as an example.

Figure

The following equipment is a winder for packaging film.

The sensor position moves up and down according to variation in the feeding reel speed, and a trigger (error) occurs when the allowable range is exceeded 100 lines (records) of data before and after the trigger occurrence are saved in a file.



Data logging settings

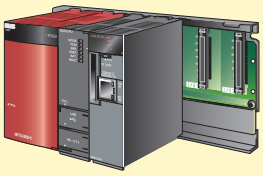
Target data	:	Feeding speed [D2003 (word [signed])], Winding speed [D2007 (word [signed])], Sensor position [D2005 (word [signed])]
Trigger condition	:	Sensor position ＞ 5, sensor position ＜ -5
Data sampling interval	:	0.1 second
Number of logging lines	:	100 lines before trigger occurrence, 100 lines after trigger occurrence
Saved file format	:	CSV file

Operation flow

STEP 1: Data logging settings (Trigger logging)

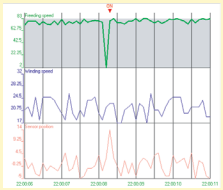
Configure the data logging settings using High Speed Data Logger Module Configuration Tool.

STEP 2: Write settings



Write the settings configured in STEP 1 to the high speed data logger module.

STEP 3: Graphical display of data



Display logged data in a graph using GX LogViewer and check the values.

STEP 1 Data logging settings (Trigger logging)

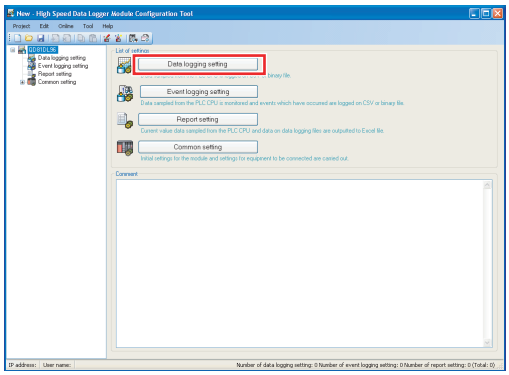
Configure the settings to log the programmable controller CPU data before and after the establishment of a trigger condition.

STEP 1-1 Start High Speed Data Logger Module Configuration Tool

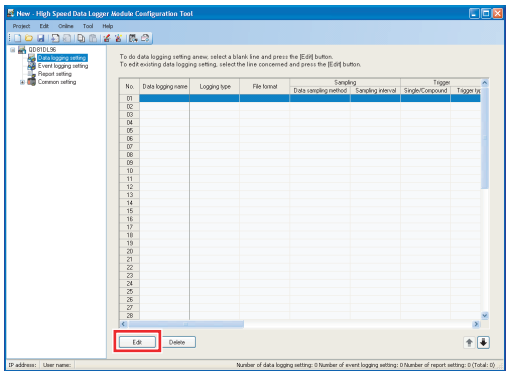
From the Windows® start menu, select [All Programs] → [MELSOFT Application] → [Logging Function] → [High Speed Data Logger Module Configuration Tool].

STEP 1-2 Display the data logging setting screen

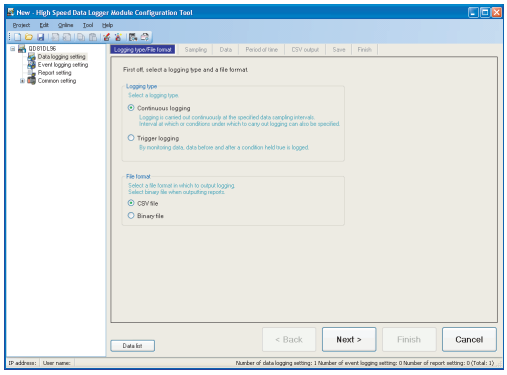
1 Click the Data logging setting button.



2 Click the Edit button.

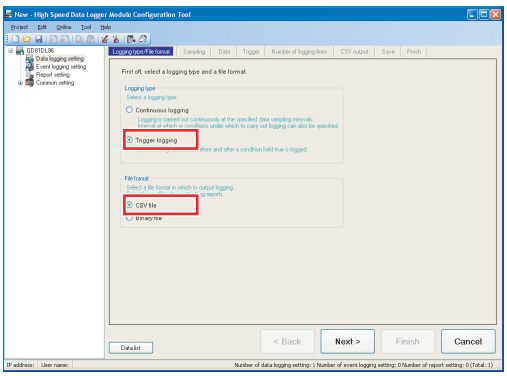


The wizard screen to configure the data logging settings is displayed.



STEP 1-3 Select the logging type and the file format

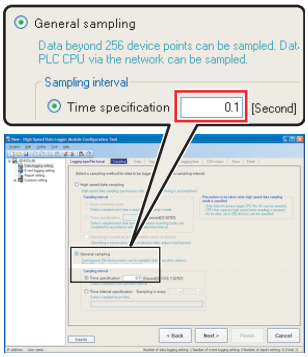
1 Select "Trigger logging" for the logging type, and "CSV file" for the file format.



2 Click the Next > button.

STEP 1-4 Select the data sampling method

1 Select "General sampling", and enter "0.1" for "Time specification".

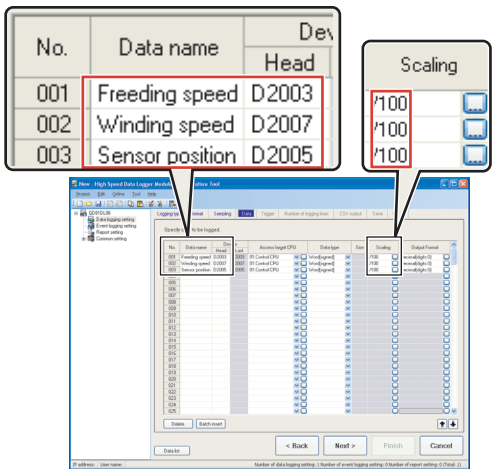


2 Click the Next > button.

STEP 1-5 Set the target data

1 Specify the data to be logged.

Enter data as shown in the screen below.

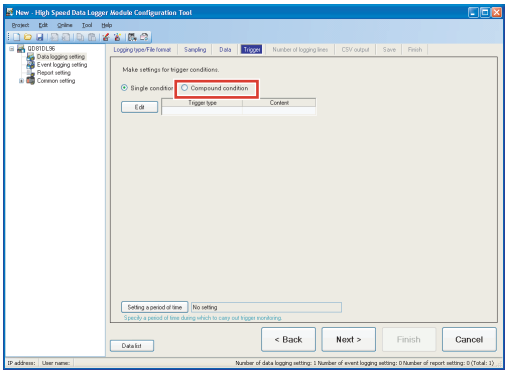


Default values are automatically displayed for "Device" (Last), "Access target CPU", "Data type", and "Output Format".

2 Click the Next > button.

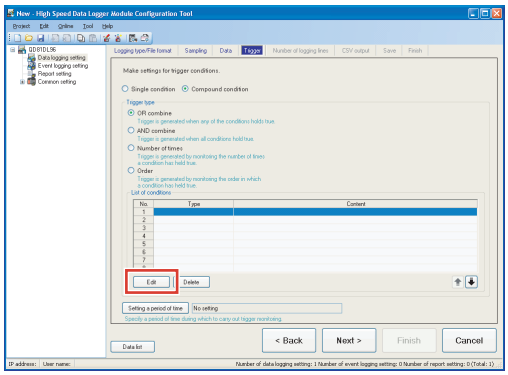
STEP 1-6 Configure the trigger settings

1 Select "Compound conditions".



The trigger types are displayed.

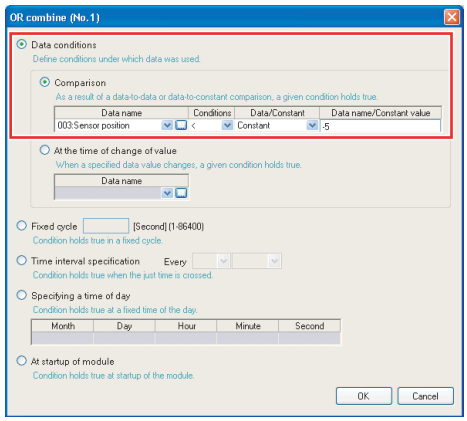
2 Click the Edit button.



The OR combine (No.1) dialog box for specifying conditions is displayed.

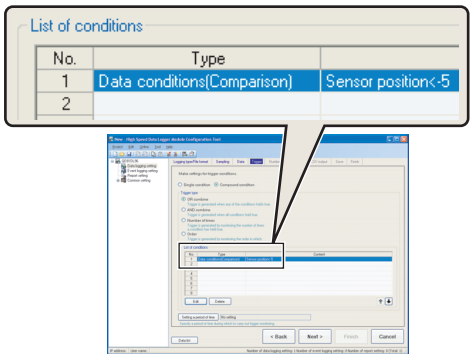
3 Specify the first trigger condition.

Enter data as shown in the screen below.

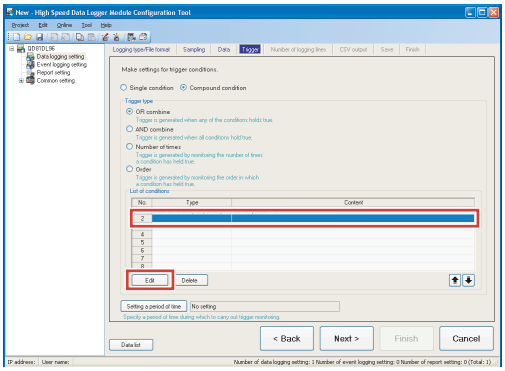


4 Click the OK button.

The specified condition is added to the list of conditions.

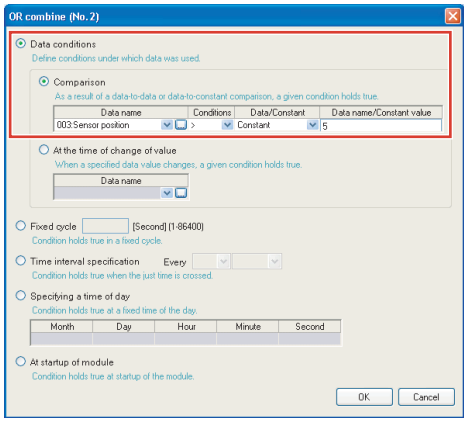


5 Select the second line in the list of conditions, and click the Edit button.



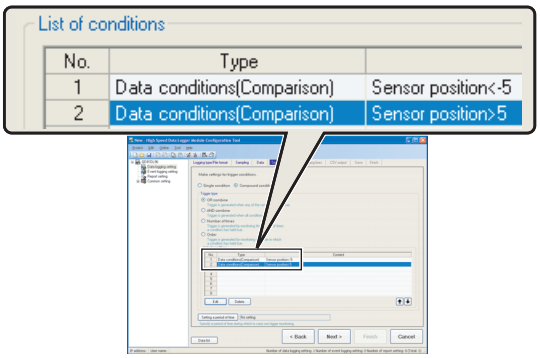
6 Specify the second trigger condition.

Enter data as shown in the screen below.



7 Click the OK button.

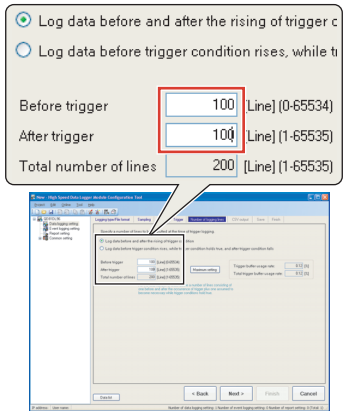
The specified condition is added to the list of conditions.



8 Click the Next > button.

STEP 1-7 Set the number of logging lines

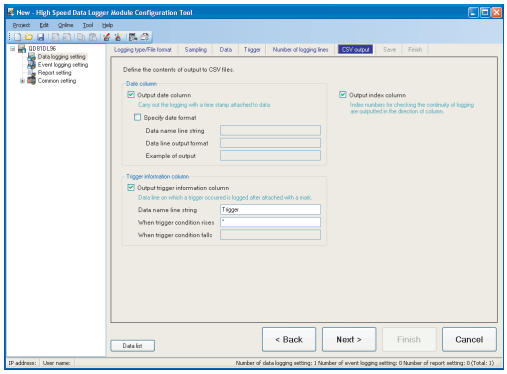
1 Enter "100" for "Before trigger", and "100" for "After trigger".



2 Click the Next > button.

STEP 1-8 Configure the CSV output settings

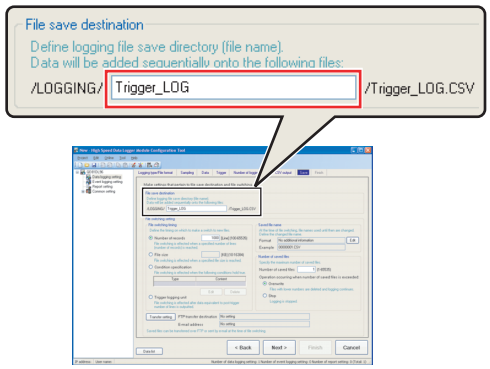
Use the default settings for the CSV output settings.



1 Click the Next > button.

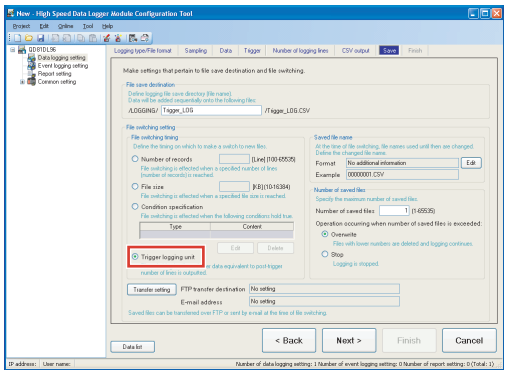
STEP 1-9 Configure the save settings

1 Enter "Trigger_LOG" for the file save destination.

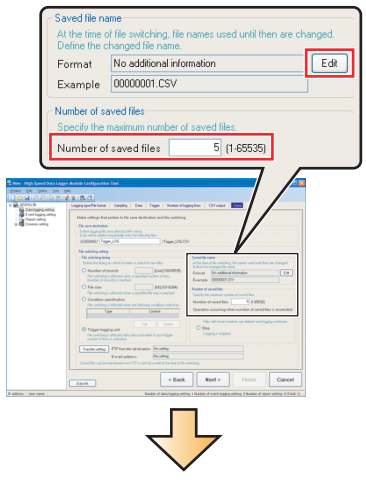


A folder with the name specified above is created on the CompactFlash card.

2 Select "Trigger logging unit" for the file switching timing.

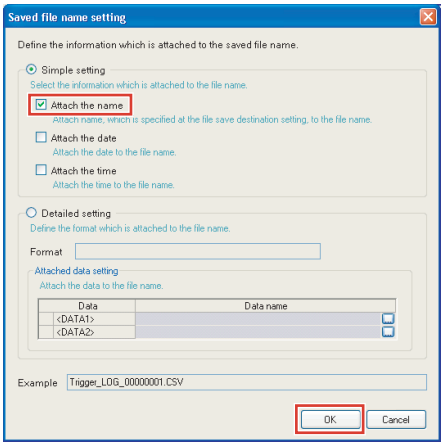


3 Enter "5" for the number of saved files and click the Edit button.



The Saved file name setting dialog box is displayed.

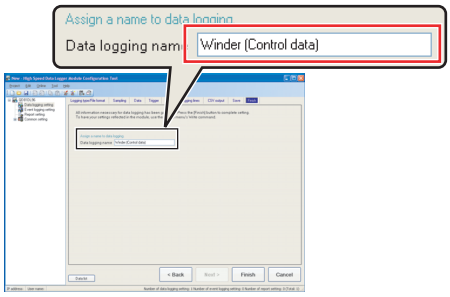
4 Check "Attach the name" and click the OK button.



5 Click the Next > button.

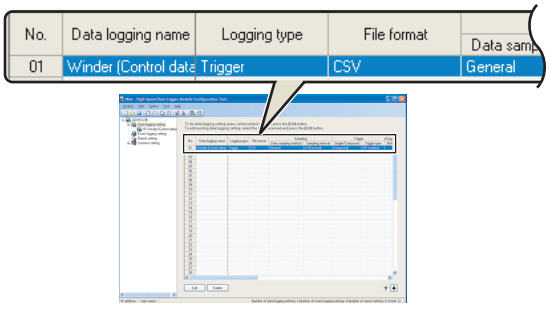
STEP 1-10 Enter the data logging name

1 Enter "Winder (Control data)" for the data logging name.



2 Click the Finish button.

The configured settings are added to the data logging setting list.



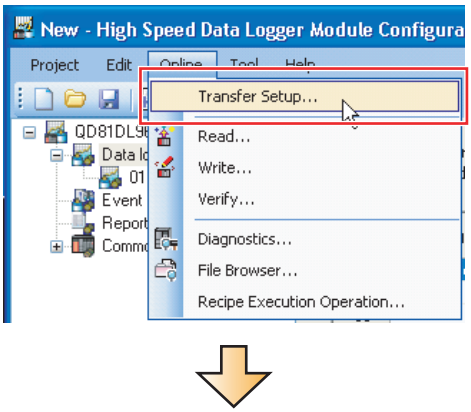
End

STEP 2 Write settings

Write the data logging settings configured in STEP 1 to the high speed data logger module.

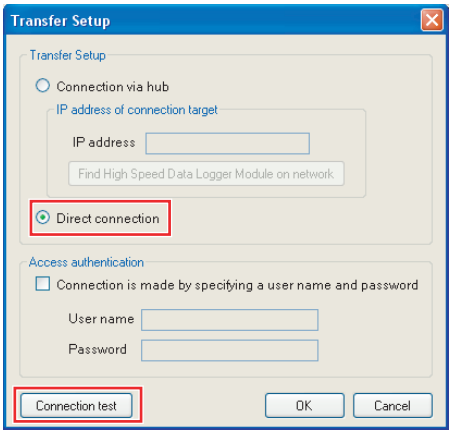
STEP 2-1 Specify the target module

1 Select [Online] → [Transfer Setup].

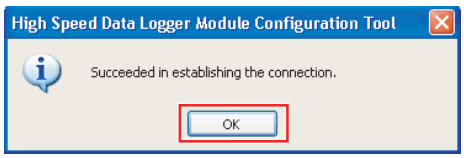


The Transfer Setup dialog box is displayed.

2 Select "Direct connection" and click the Connection test button.



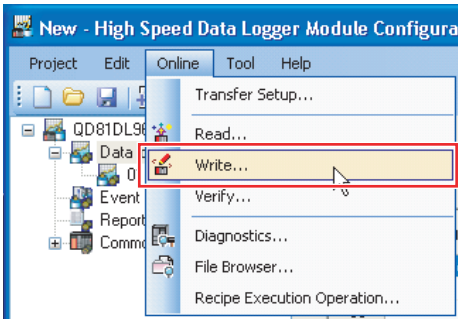
3 Click the OK button.



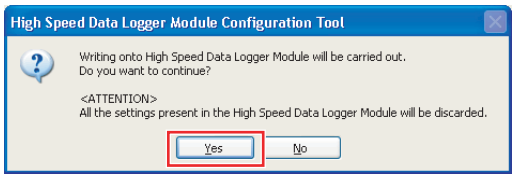
4 Click the OK button on the Transfer Setup dialog box.

STEP 2-2 Write the settings

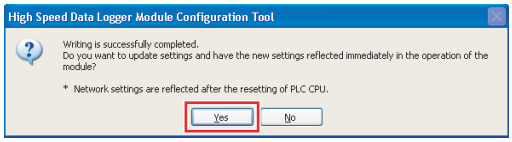
1 Select [Online] → [Write].



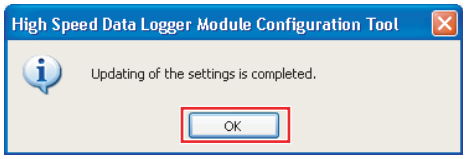
2 Click the Yes button.



3 Click the Yes button.



4 Click the OK button.



The data logging settings are written to the CompactFlash card installed on the high speed data logger module.
The data logging function starts immediately after the data are written because the CPU mode was set to 'RUN' at Preparation.
(☞ Activating the system (P. 6)).

End

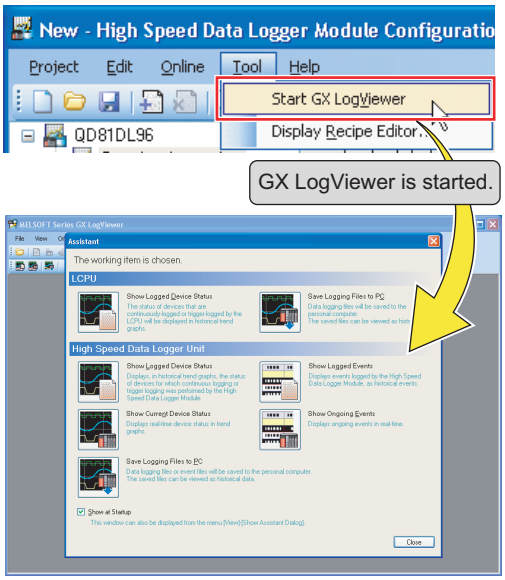
STEP 3 Graphical display of data

Display logged data in graphs using GX LogViewer.

STEP 3-1 Start GX LogViewer

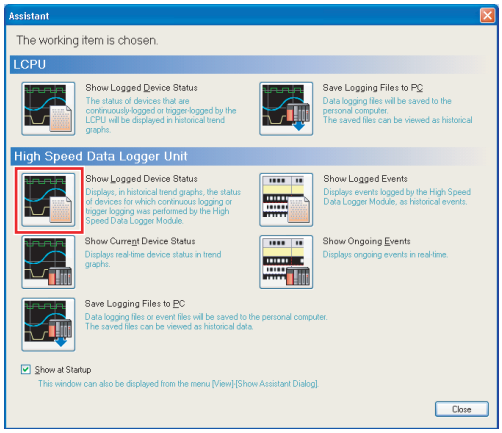
Start GX LogViewer from the High Speed Data Logger Module Configuration Tool.

1 Select [Tool] → [Start GX LogViewer].



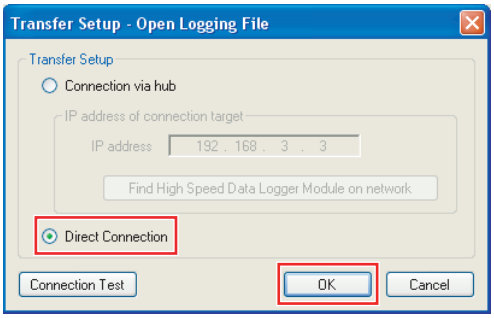
STEP 3-2 Specify the data to be displayed

1 Click the button on the "Assistant" screen.



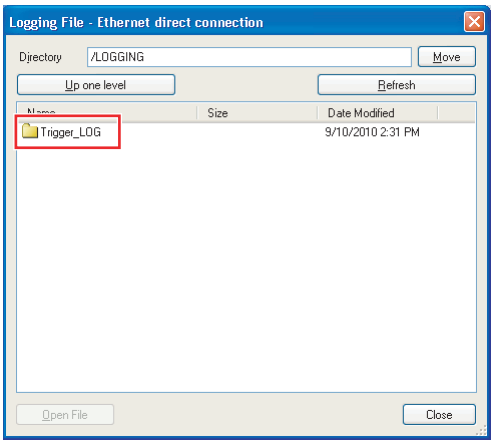
The Transfer Setup dialog box is displayed.

2 Select "Direct Connection" and click the OK button.



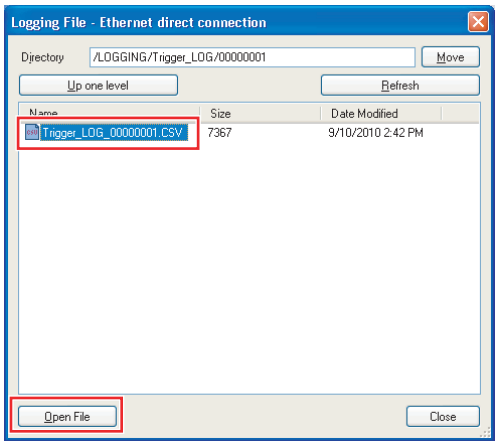
The Logging File dialog box is displayed.

3 Double-click each folder in the following order: "Trigger_LOG" → "00000001".



Click the Refresh button when the folder is not displayed in the list.

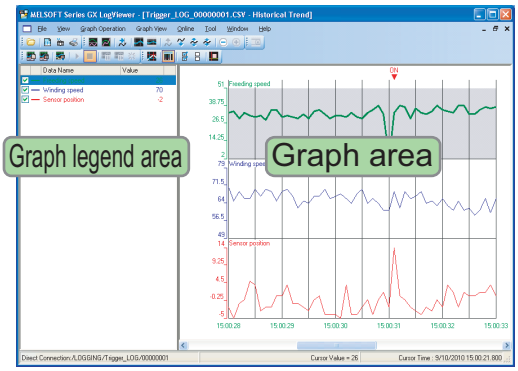
4 Select the displayed CSV file and click the Open File button.



A list of data names and graphs are displayed behind the Assistant screen.

5 Click the Close button on the Assistant screen.

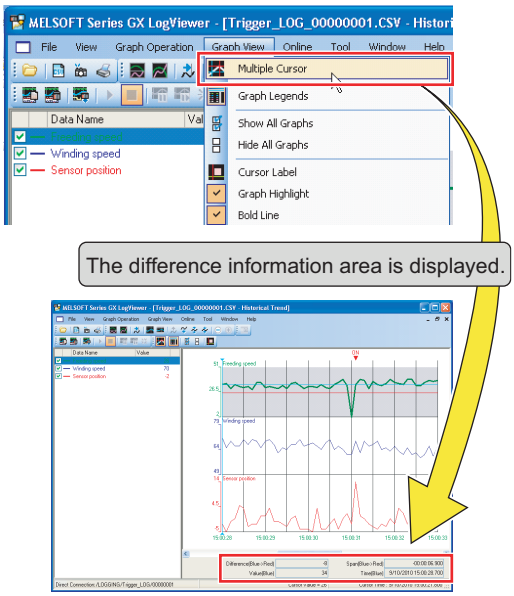
The data specified as target data in the data logging settings are displayed in the graph legend area and the graph area.



* Note that in this guide, the background color was changed to white in graph properties ([Graph View] → [Graph Properties]). Colors of graph lines can be also changed in graph properties.

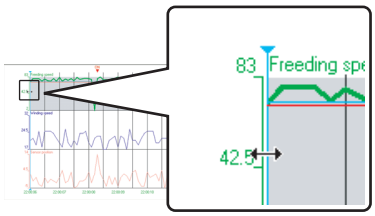
STEP 3-3 Display multiple cursors

1 Select [Graph View] → [Multiple Cursor].

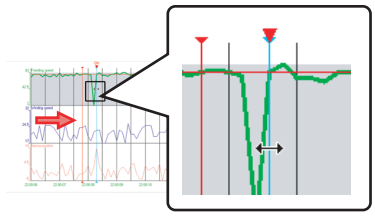


STEP 3-4 Check data using the cursors

1 Select a graph. Move the red and blue cursors, located at the left edge of the graph, to the desired positions and check their respective values.



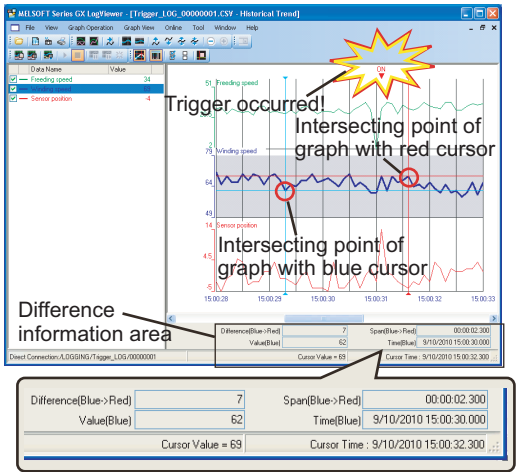
Move the red and blue cursors.



* For an easier operation, select "Move Red Cursor Here" or "Move Blue Cursor Here" from the menu displayed by right-clicking on a graph area.

2 Check the cursor details displayed in the difference information area.

The elapsed time and the value difference between the two cursors (blue to red) are displayed.
In addition, the value and time of each cursor's position are also displayed.



3 Analyze the cause of error from the graphs

- The sensor position rose rapidly (①), and a trigger occurred (②).
- The feeding speed drastically decreased (③) immediately before the rise in sensor position, and thus, this could have caused the trigger.

Errors are primarily diagnosed by checking the data before and after the trigger occurrence.

▶ End

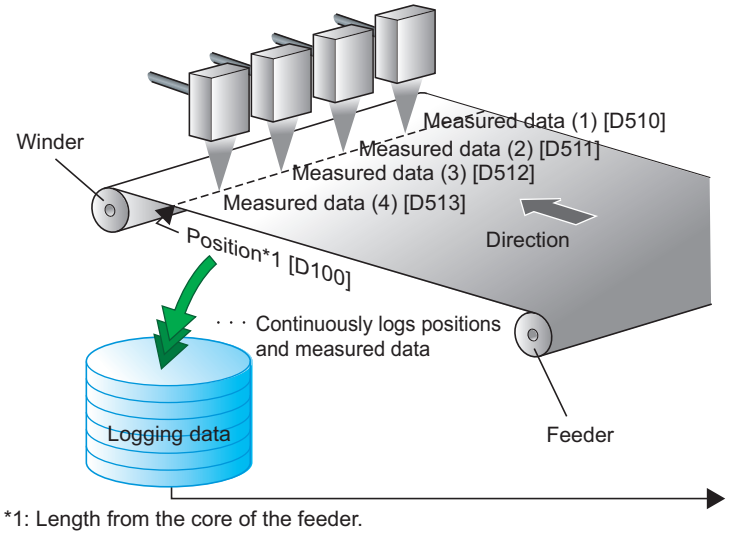
CASE 2 Creating reports from continuously logged data

This section explains 'continuous logging function' and 'report creation' using Xbar-R management chart as an example.

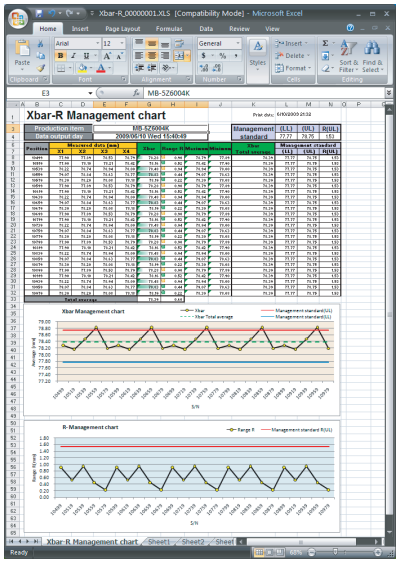
Figure

The thickness of the film (measured data) is measured at four points, and recorded in the report named Xbar-R management chart (Excel format).

(Production item: MB-5Z6004K [D502])



*1: Length from the core of the feeder.



Data logging settings

Target data	:	Position [D100 (Double word [signed])], Measured data (1) [D510 (Word [signed])], Measured data (2) [D511 (Word [signed])], Measured data (3) [D512 (Word [signed])], Measured data (4) [D513 (Word [signed])]
Data sampling interval	:	2 seconds
Saved file format	:	Binary file

Report settings

Report output data	:	Target data, production item [D502 (String)], creation time
Number of logging lines in a report	:	25
Report creation period	:	50 seconds

Operation flow

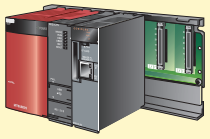
STEP 1: Data logging settings (Continuous logging)

Configure the data logging settings using High Speed Data Logger Module Configuration Tool.

STEP 2: Report settings

Configure the report settings using High Speed Data Logger Module Configuration Tool.

STEP 3: Write settings



Write the data logging settings and report settings configured in STEP 1 and 2 to the high speed data logger module.

STEP 4: Checking created report

Check the report file created on the CompactFlash card of the high speed data logging module on Excel.

STEP 1 Data logging settings (Continuous logging)

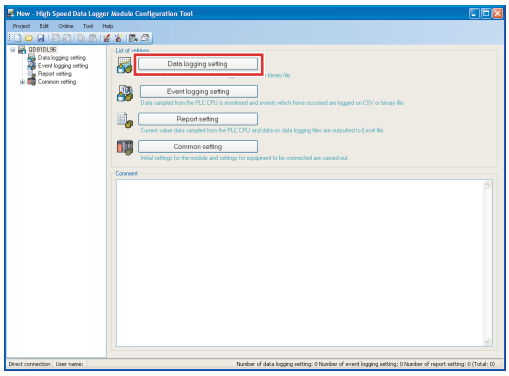
Configure the settings to log the programmable controller CPU data at the specified data sampling interval.

STEP 1-1 Start High Speed Data Logger Module Configuration Tool

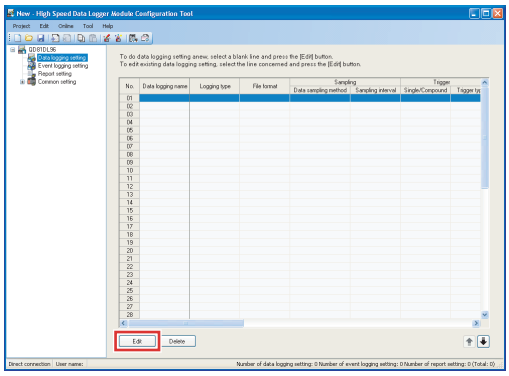
From the Windows® start menu, select [All Programs] → [MELSOFT Application] → [Logging Function] → [High Speed Data Logger Module Configuration Tool].

STEP 1-2 Display the data logging setting screen

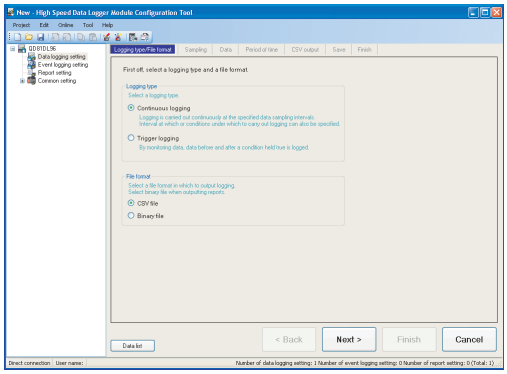
1 Click the [Data logging setting] button.



2 Click the [Edit] button.

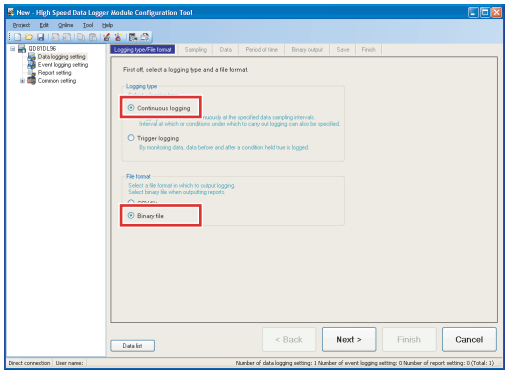


The wizard screen to configure the data logging settings is displayed.



STEP 1-3 Select the logging type and the file format

1 Select "Continuous logging" for the logging type, and "Binary file" for the file format.



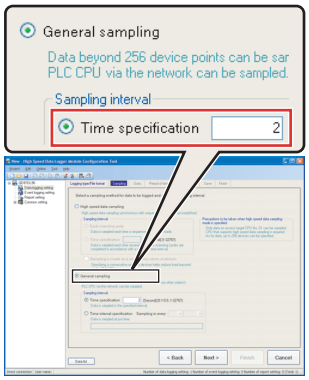
2 Click the [Next >] button.

Remark

When using the report creation function, the data logging file format must be set to "Binary file".

STEP 1-4 Select the data sampling method

1 Select "General sampling", and enter "2" for "Time specification".



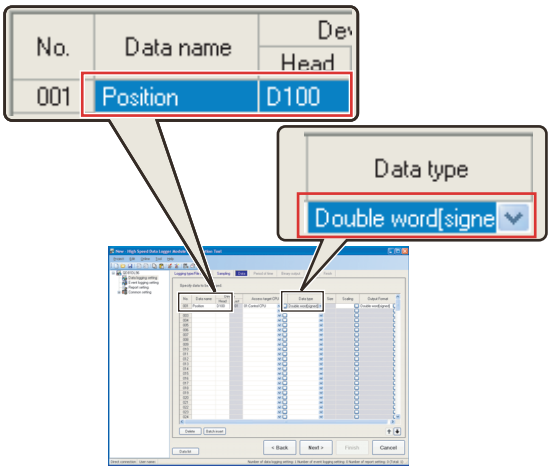
2 Click the [Next >] button.

STEP 1-5 Set the target data

To set the target data, specify devices individually, or specify consecutive devices in batch.

1 Enter the target data. (Individual)

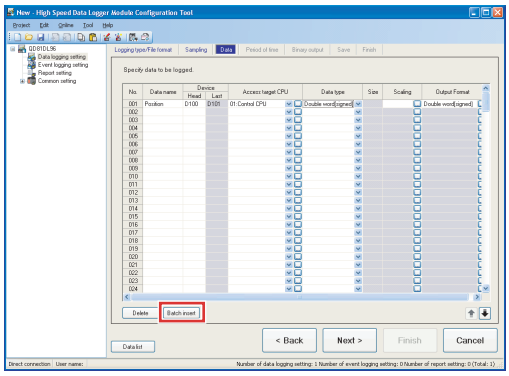
Enter data as shown in the screen below.



Default values are automatically displayed for "Device" (Last), "Access target CPU", "Data type", and "Output Format".

2 Click the Batch insert button. (Batch)

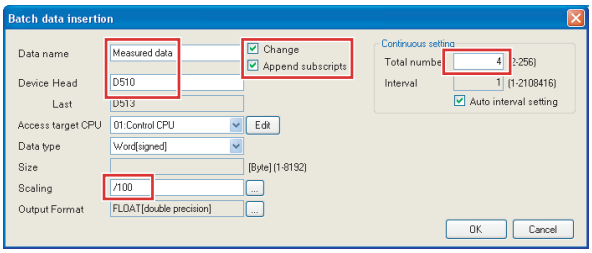
Set the consecutive devices in batch.



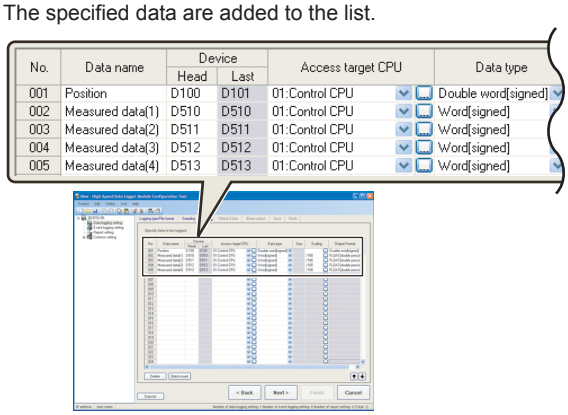
The Batch data insertion dialog box is displayed.

3 Enter the information regarding the target data, and click the OK button.

Specify data as shown in the screen below.
Enter the data name after "Change" is checked.



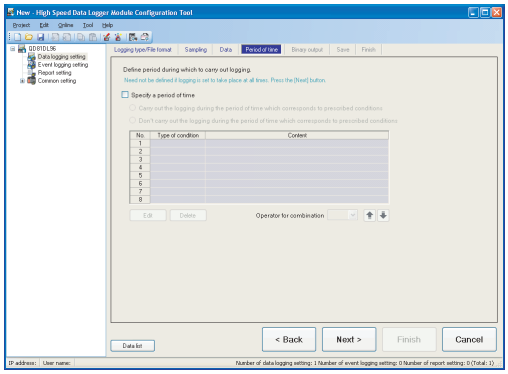
The specified data are added to the list.



4 Click the Next > button.

STEP 1-6 Set the logging period

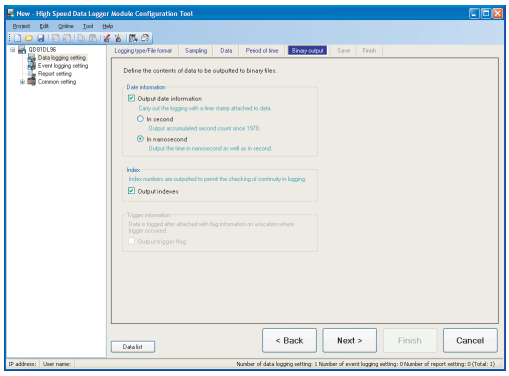
Use the default settings for the logging period.



1 Click the Next > button.

STEP 1-7 Configure the binary output settings

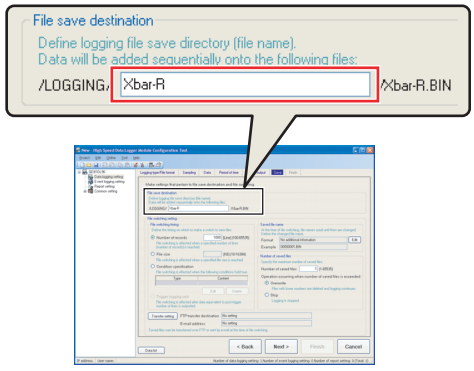
Use the default settings for the binary output settings.



1 Click the Next > button.

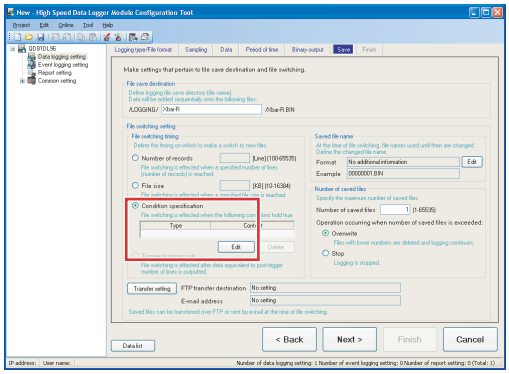
STEP 1-8 Configure the save settings

1 Enter "Xbar-R" for the file save destination.



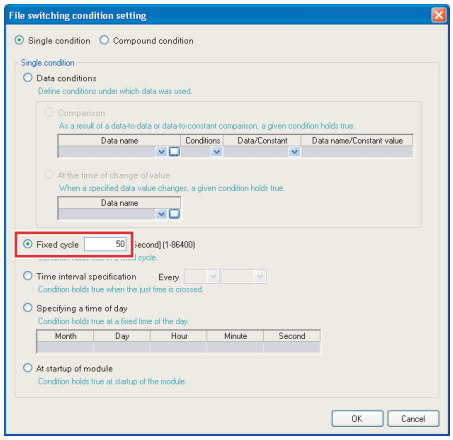
A folder with the name specified above is created on the CompactFlash card.

2 Select "Condition specification" for the file switching timing, and click the Edit button.

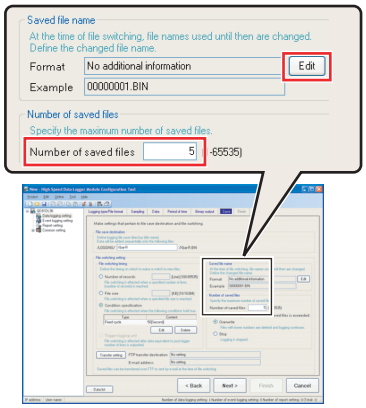


The File switching condition setting dialog box is displayed.

3 Select "Fixed cycle", enter "50", and click the OK button.

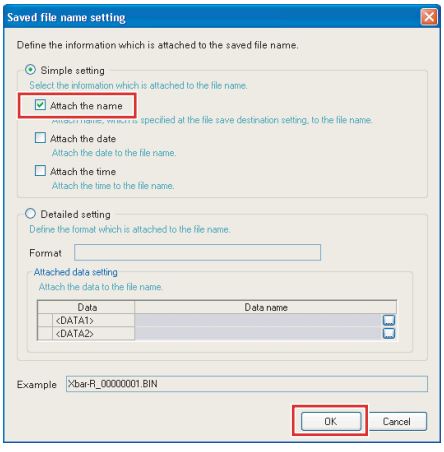


4 Enter "5" for the number of saved files and click the Edit button.



The Saved file name setting dialog box is displayed.

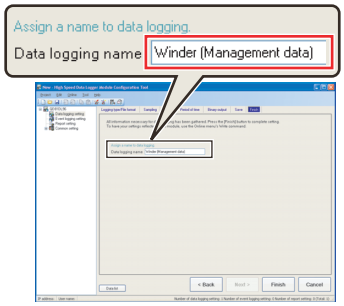
5 Check "Attach the name" and click the OK button.



6 Click the Next > button.

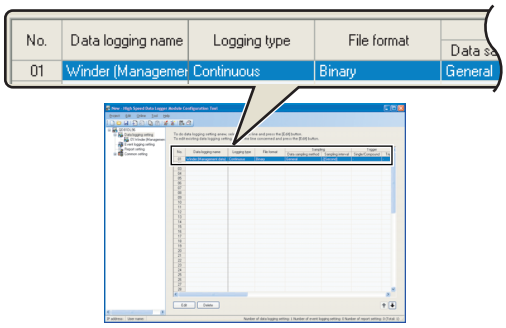
STEP 1-9 Enter the data logging name

1 Enter "Winder (Management data)" for the data logging name.



2 Click the Finish button.

The configured settings are added to the data logging setting list.



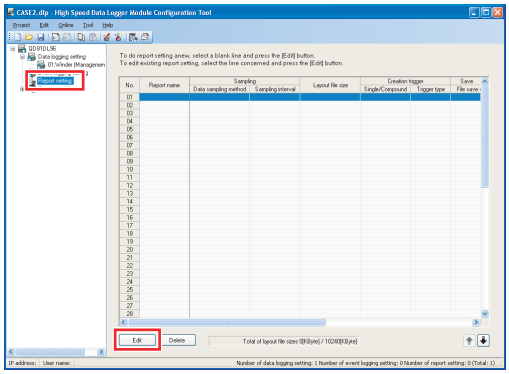
▶ End

STEP 2 Report settings

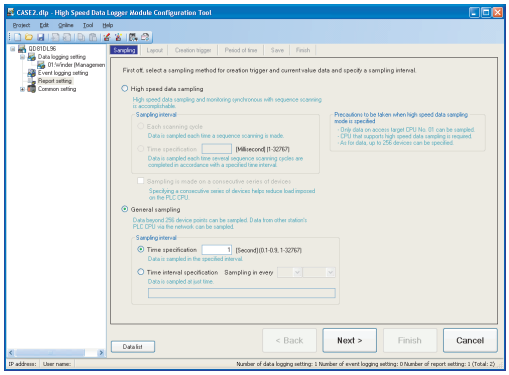
Configure the settings to create a report (Excel format) using data sampled by the high speed data logger module.

STEP 2-1 Display the report setting screen

1 Click "Report setting" on the tree and click the Edit button.

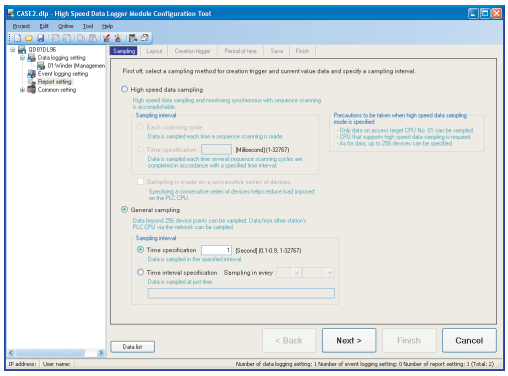


The wizard screen to configure the report settings is displayed.



STEP 2-2 Select the data sampling method

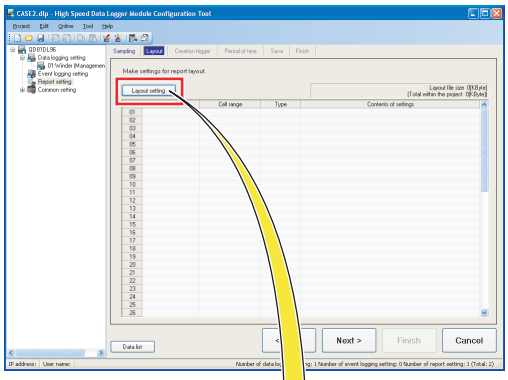
Use the default settings for the data sampling method.



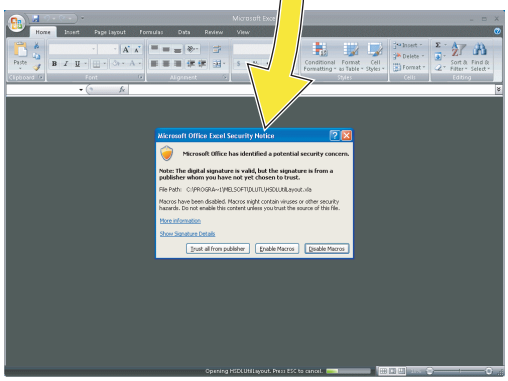
1 Click the Next > button.

STEP 2-3 Display the "Layout setting" screen

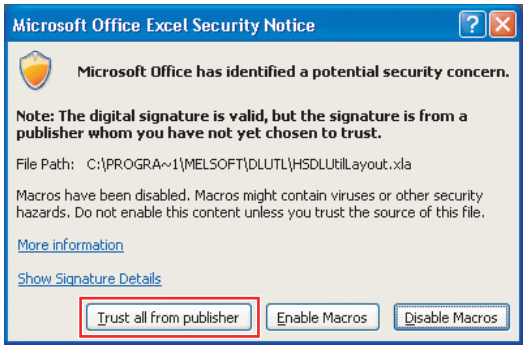
1 Click the Layout setting button.



Excel is started and the confirmation screen is displayed.



2 Click the Trust all from publisher button.
(Click the Enable Macros button for Excel 2003.)

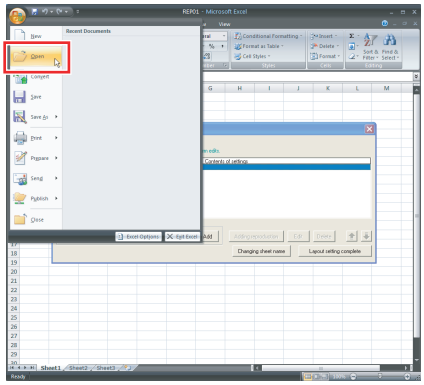


The Layout setting dialog box is displayed.

STEP 2-4 Load a layout file

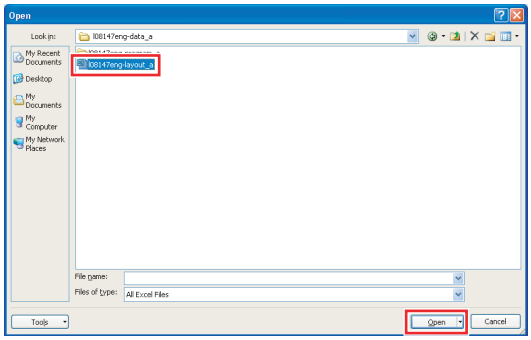
In this guide, the layout is set by using the provided layout file (l08147eng-layout_a.xls). (☞ Preparation (P. 5))
Copy the layout sheet to the sheet used for layout setting.

1 Select → [Open] on Excel 2007.
(For Excel 2003, select [File] → [Open].)

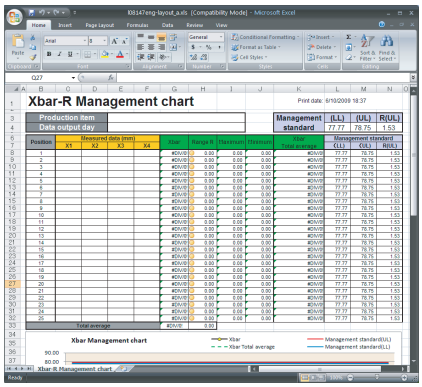


The Open dialog box is displayed.

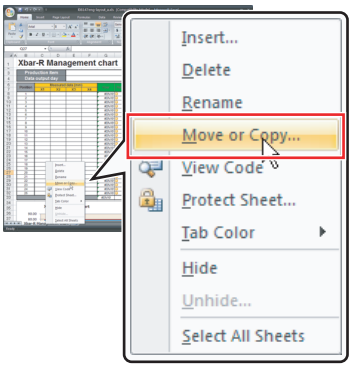
2 Select the acquired "l08147eng-layout_a.xls" file and click the Open button.



The "Xbar-R Management chart" sheet is displayed with tables and graphs.

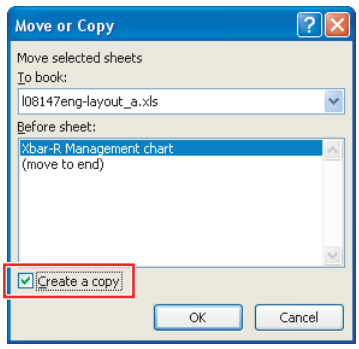


3 Right-click on the sheet tab and select "Move or Copy".

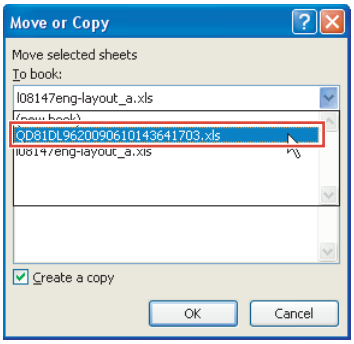


The Move or Copy dialog box is displayed.

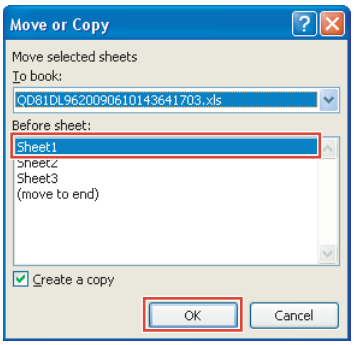
4 Check "Create a copy".



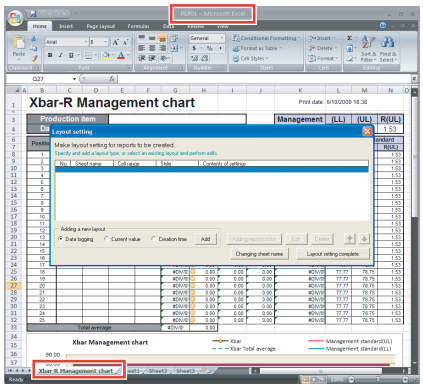
5 Select "QD81DL96YYYYMMDD ... .xls" from the list of "To book".



6 Select "Sheet1" from the list of "Before sheet", and click the OK button.



The "Xbar-R Management chart" sheet is copied to the file "REP01" on which the layout settings are configured.



Close "l08147eng-layout_a.xls" because it is not used for the later operation.

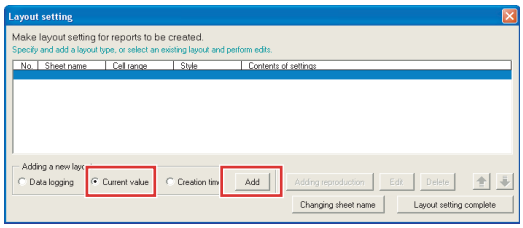
Remark

Precautions on changing a sheet name
A sheet name must be changed by using the Changing sheet name button on the Layout setting dialog box. If the sheet name is changed using other methods, the layout settings will not configure properly.

STEP 2-5 Specify the production item

Designate a cell in the report file to display the production item code (current data stored in D502).

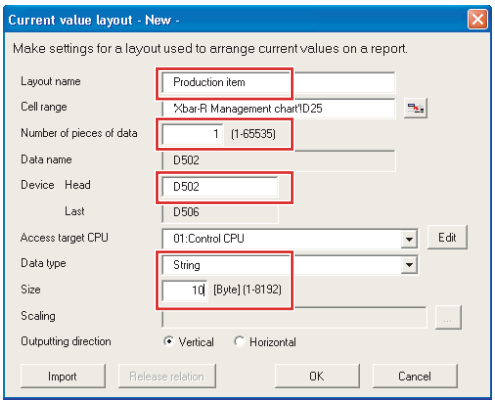
1 Select "Current value" for "Adding a new layout", and click the Add button.



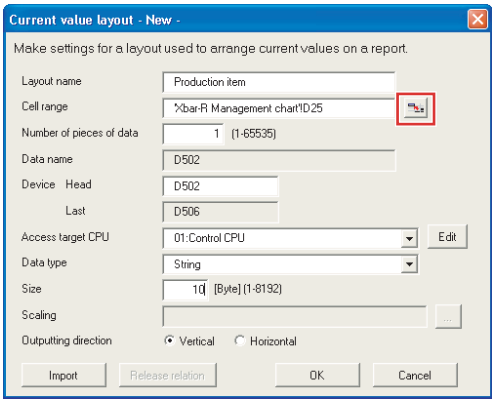
The Current value layout dialog box is displayed.

2 Specify the data for "Production item" (except for the cell range).

Enter data as shown in the screen below.

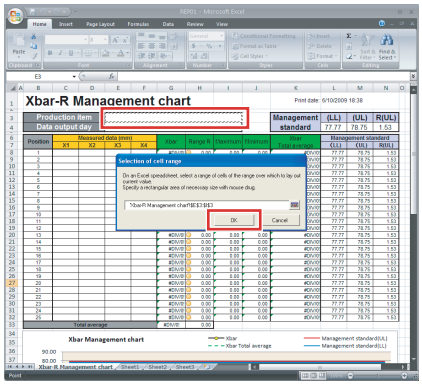


3 Click the (selection of cell range) button.

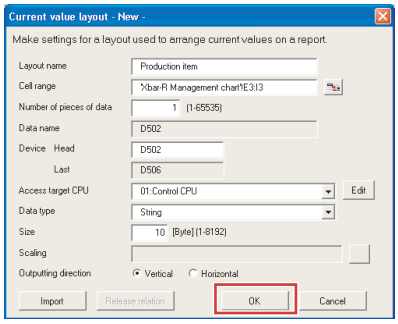


The Selection of cell range dialog box is displayed.

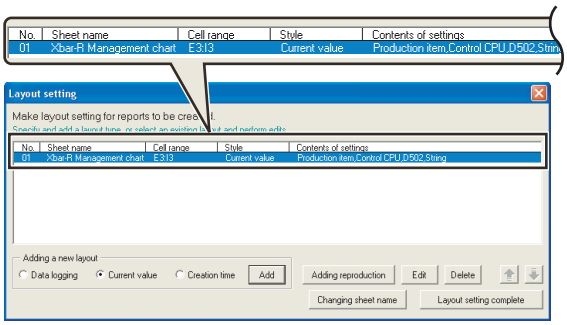
4 Select the cell to the right of "Production item" and click the OK button.



5 Click the OK button.



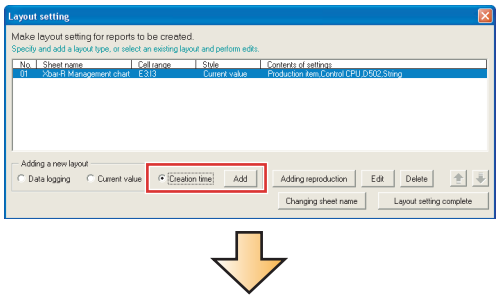
The current value layout is added to the list on the Layout setting dialog box.



STEP 2-6 Specify the data output day

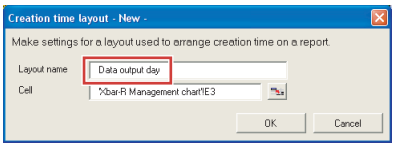
Designate a cell in the report file to display the report creation time.

1 Select "Creation time" and click the Add button.

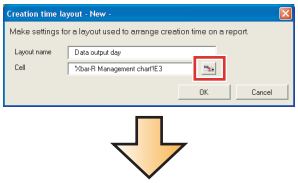


The Creation time layout dialog box is displayed.

2 Enter "Data output day" for the layout name.

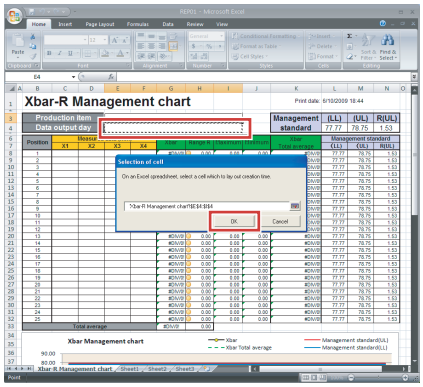


3 Click the (selection of cell) button.

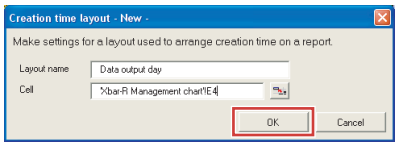


The Selection of cell dialog box is displayed.

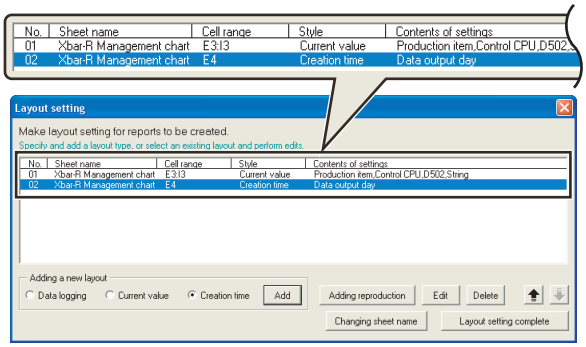
4 Select the cell to the right of "Data output day" and click the OK button.



5 Click the OK button.



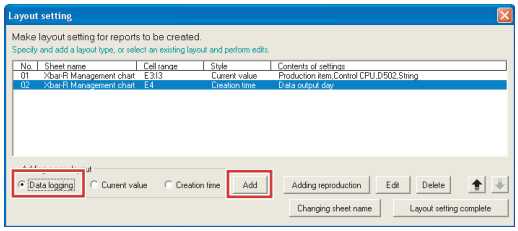
The creation time layout is added to the list on the Layout setting dialog box.



STEP 2-7 Specify the logging data

Designate the cells labelled 'position' and 'measured data' in the report file to display the logging data (D100, D510 to D513).

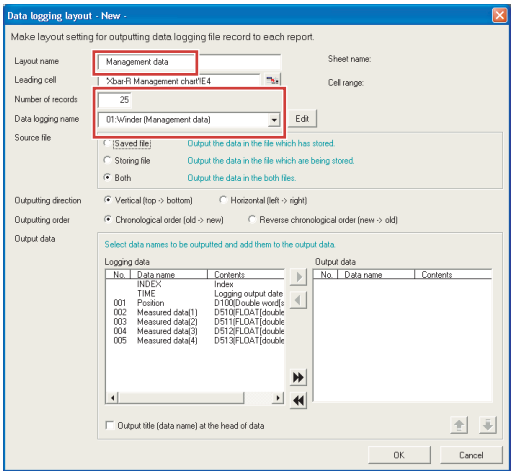
1 Select "Data logging" and click the Add button.



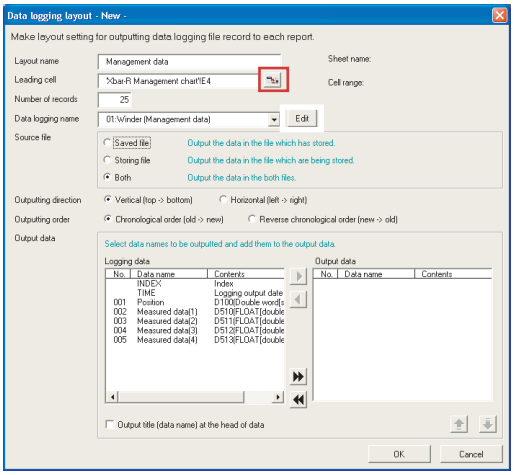
The Data logging layout dialog box is displayed.

2 Specify the data used for data logging (except for the leading cell and output data).

Enter data as shown in the screen below.

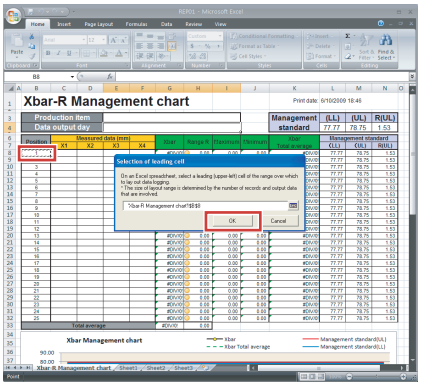


3 Click the (selection of leading cell) button.



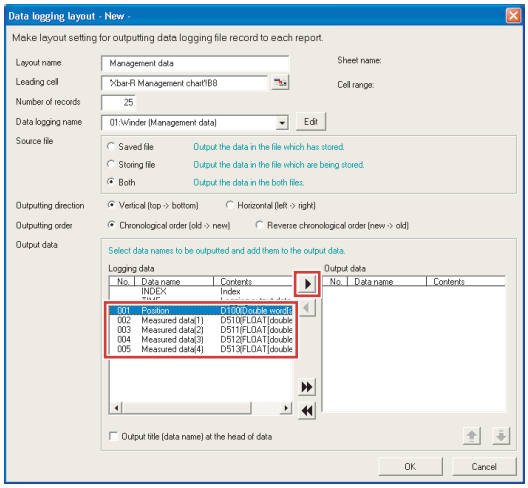
The Selection of leading cell dialog box is displayed.

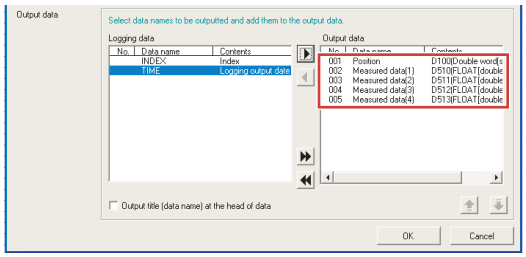
4 Select the cell under "Position" and click the OK button.



5 Select the logging data from No. 001 to 005 one by one and click ▶ (repeat the operation for each data).

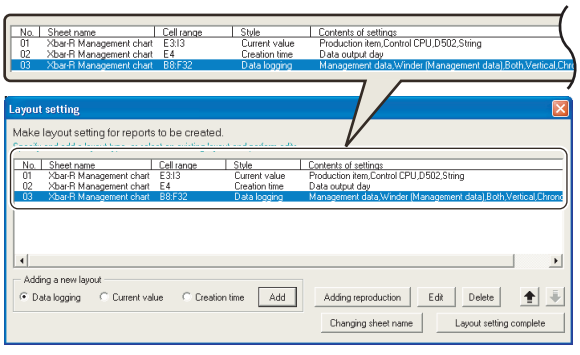
Add the logging data No. 001 to 005 to the field of "Output data".





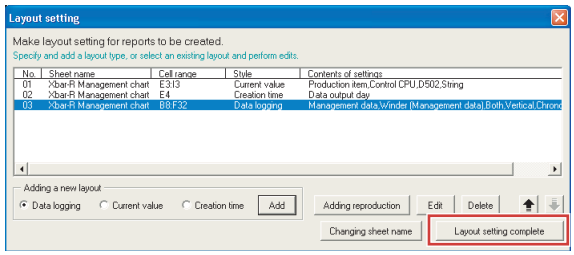
6 Click the OK button on the Data logging layout dialog box.

The data logging layout is added to the list on the Layout setting dialog box.

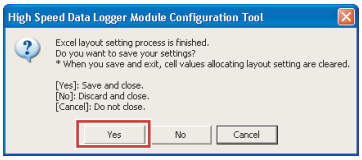


STEP 2-8 Finish the layout settings

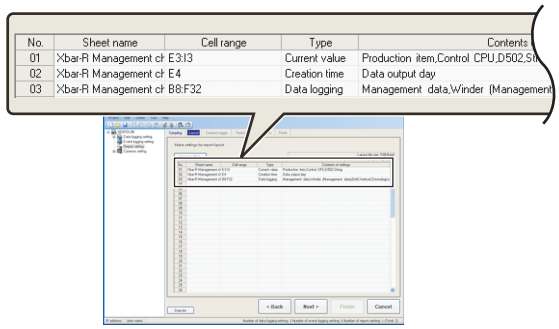
1 Click the Layout setting complete button.



2 Click the Yes button.



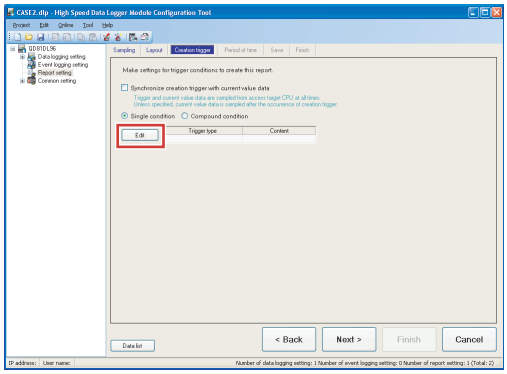
Three layout settings are added to the layout setting list.



3 Click the Next > button.

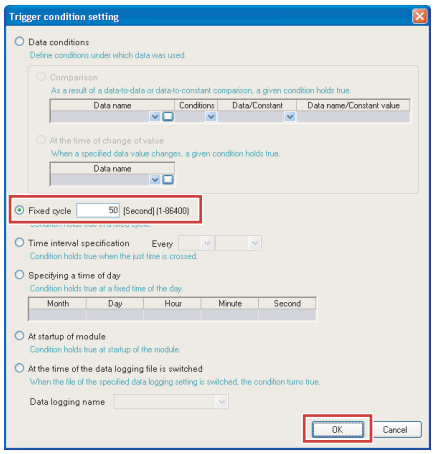
STEP 2-9 Configure trigger settings

1 Click the Edit button.

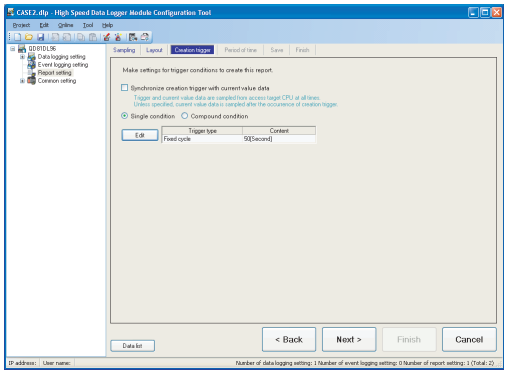


The Trigger condition setting dialog box is displayed.

2 Select "Fixed cycle", enter "50", and click the OK button.



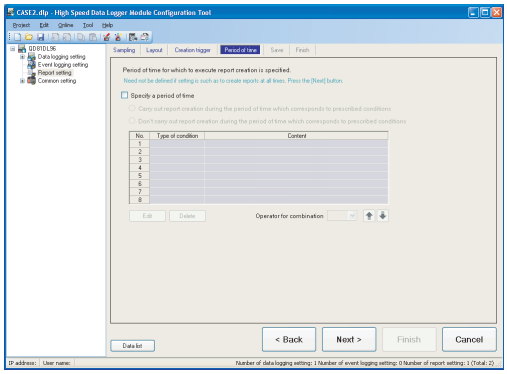
The specified condition is applied to the wizard screen.



3 Click the Next > button.

STEP 2-10 Set the report creation periods

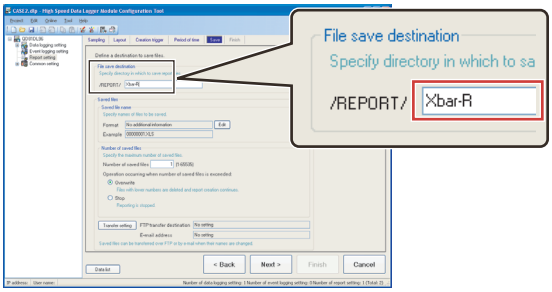
Use the default settings for the report creation periods.



1 Click the Next > button.

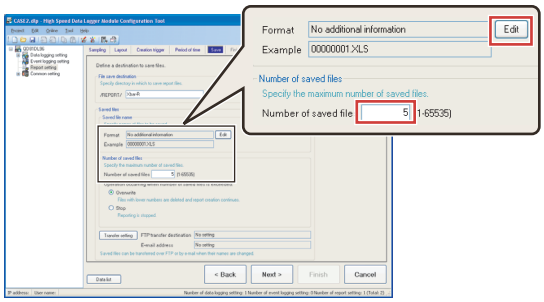
STEP 2-11 Configure the save settings

1 Enter "Xbar-R" for the file save destination.



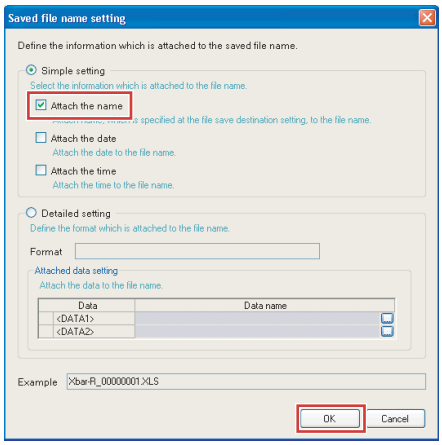
A folder with the name specified above is created on the CompactFlash card.

2 Enter "5" for the number of saved files and click the Edit button.



The Saved file name setting dialog box is displayed.

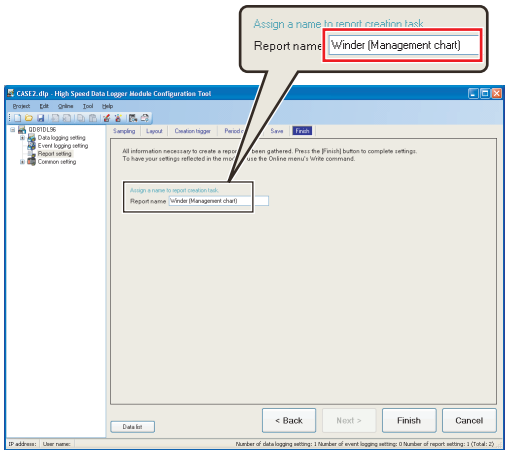
3 Check "Attach the name" and click the OK button.



4 Click the Next > button.

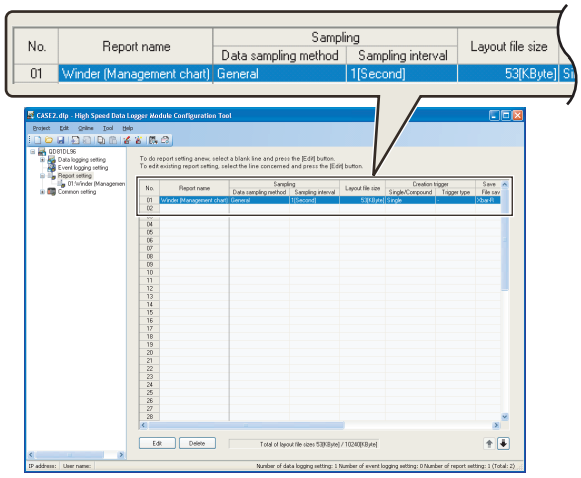
STEP 2-12 Enter the report name

1 Enter "Winder (Management chart)" for the report name.



2 Click the Finish button.

The configured settings are added to the report setting list screen.



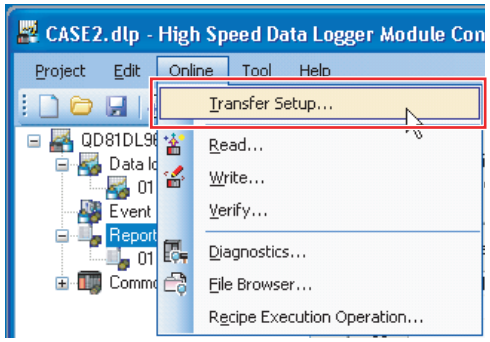
End

STEP 3 Write settings

Write the data logging and report settings configured in STEP 1 and 2 to the high speed data logger module.

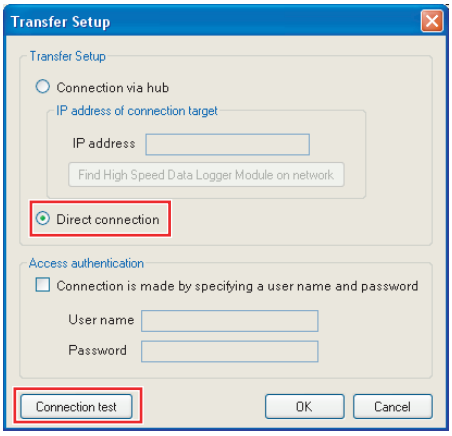
STEP 3-1 Specify the target module

1 Select [Online] → [Transfer Setup].

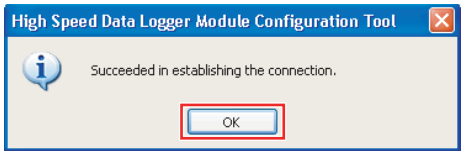


The Transfer Setup dialog box is displayed.

2 Select "Direct connection" and click the Connection test button.



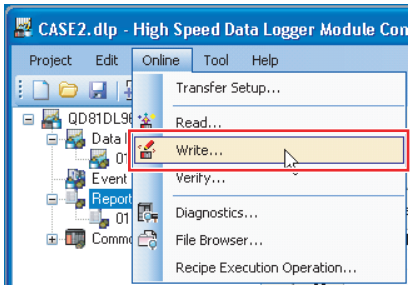
3 Click the OK button.



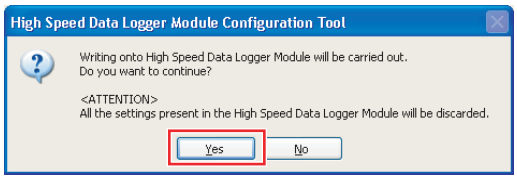
4 Click the OK button on the Transfer Setup dialog box.

STEP 3-2 Write the settings

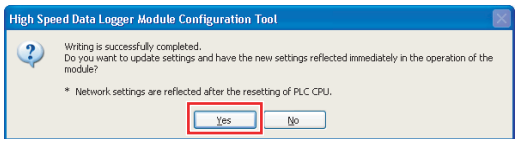
1 Select [Online] → [Write].



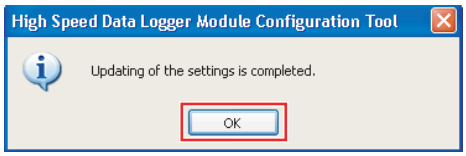
2 Click the Yes button.



3 Click the Yes button.



4 Click the OK button.



The data logging and report settings are written to the CompactFlash card installed on the high speed data logger module.
The data logging function and the report creation start immediately after the data are written because the CPU mode was set to 'RUN' at Preparation. (☞ Activating the system (P. 6))

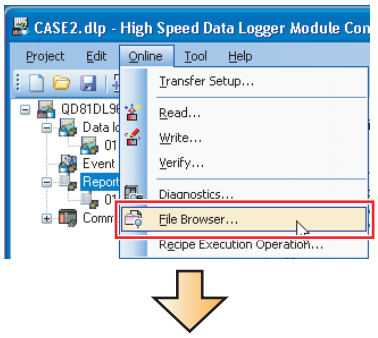
End

STEP 4 Checking created report

Use Excel to check the report created in STEP 3.

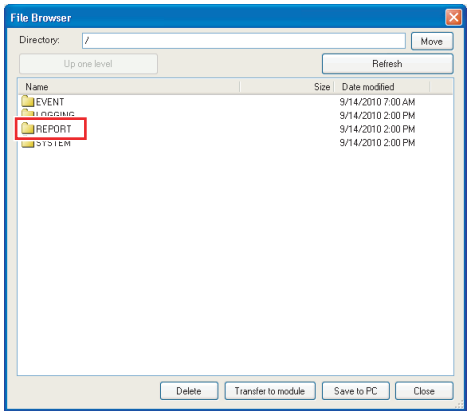
STEP 4-1 Save the report file to a personal computer

1 Select [Online] → [File Browser].



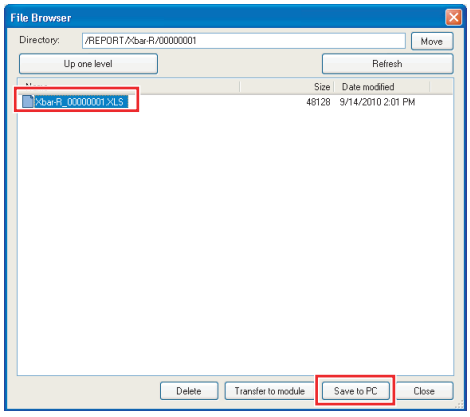
The File Browser dialog box is displayed.

2 Double-click each folder in the following order: "REPORT" → "Xbar-R" → "00000001".

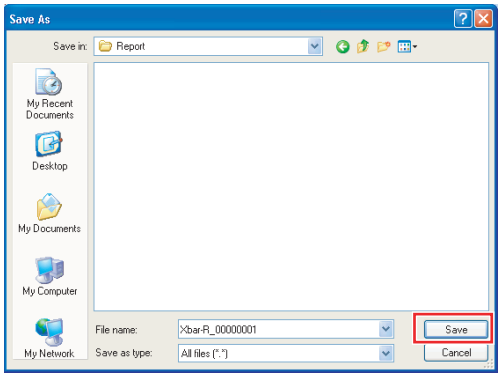


Click the Refresh button when the folder is not displayed in the list.

3 Select the XLS file and click the Save to PC button.



4 Specify the save destination (option) on the Save As dialog box, and click the Save button.

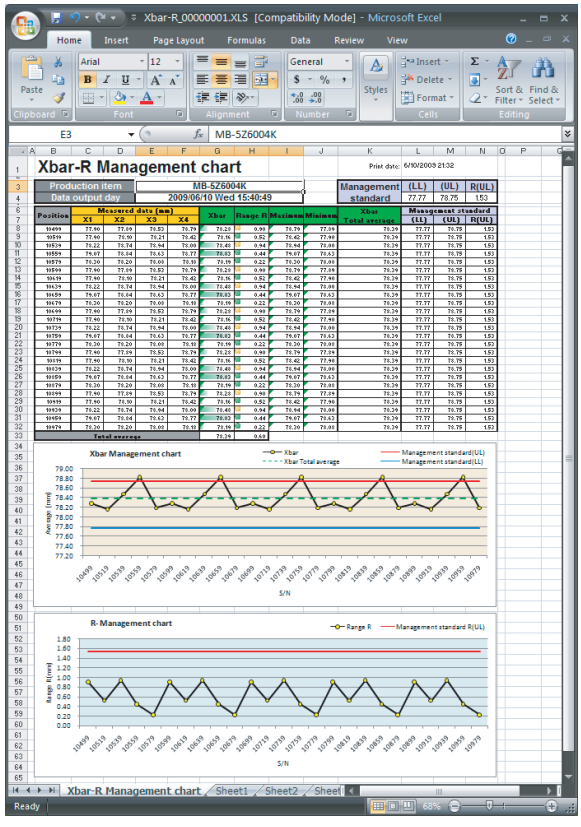


5 Click the Open File button on the File Browser dialog box.

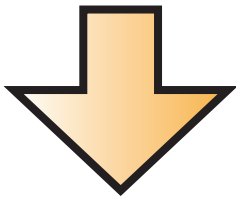
STEP 4-2 Check the report on EXCEL

1 Open the XLS file saved in a personal computer.

2 Check that the logged data are applied to the table and graphs on the "Xbar-R Management chart" sheet.



End



This concludes the Quick Start Guide on the high speed data logger module.

The high speed data logger module supports a number of functions in addition to the logging function and report function introduced in this guide.

For details on the functions, refer to the following manual:

☞ High Speed Data Logger Module User's Manual SH-080818ENG

Microsoft, Windows, Windows Vista, Excel are registered trademarks of Microsoft Corporation in the United States and other countries.

Ethernet is a trademark of Xerox Corporation.

All other company names and product names used in this guide are trademarks or registered trademarks of their respective companies.

Precautions for Choosing the Products

This publication explains the typical features and functions of the Q Series programmable controllers and does not provide restrictions and other information on usage and module combinations. When using the products, always read the user's manuals of the products.
Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠ For safe use

- To use the products given in this publication properly, always read the "manuals" before starting to use them.
- The products have been manufactured as general-purpose parts for general industries, and have not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- The products have been manufactured under strict quality control. However, when installing the products where major accidents or losses could occur if the products fail, install appropriate backup or failsafe functions in the system.

MEMO

Mitsubishi Electric Programmable Controllers
High Speed Data Logger Module

Country/Region	Sales office	Tel/Fax
USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
Mexico	MITSUBISHI ELECTRIC AUTOMATION, INC. Mexico Branch Mariano Escobedo #69, Col. Zona Industrial, Tlalnepantla Edo, C.P.54030, Mexico	Tel : +52-55-3067-7500
Brazil	MITSUBISHI ELECTRIC DO BRASIL COMÉRCIO E SERVIÇOS LTDA. Rua Jussara, 1750-Bloco B Anexo, Jardim Santa Cecilia, CEP 06465-070, Barueri-SP, Brasil	Tel : +55-11-4689-3000 Fax : +55-11-4689-3016
Germany	MITSUBISHI ELECTRIC EUROPE B.V. German Branch Gothaer Strasse 8, D-40880 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-1120
UK	MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K.	Tel : +44-1707-28-8780 Fax : +44-1707-27-8695
Ireland	MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount, IRL-Dublin 24, Ireland	Tel : +353-1-4198800 Fax : +353-1-4198890
Italy	MITSUBISHI ELECTRIC EUROPE B.V. Italian Branch Centro Direzionale Colleoni-Palazzo Sirio Viale Colleoni 7, 20864 Agrate Brianza(Milano) Italy	Tel : +39-039-60531 Fax : +39-039-6053-312
Spain	MITSUBISHI ELECTRIC EUROPE, B.V. Spanish Branch Carretera de Rubí, 76-80-Apdo. 420, 08173 Sant Cugat del Vallés (Barcelona), Spain	Tel : +34-935-65-3131 Fax : +34-935-89-1579
France	MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France	Tel : +33-1-55-68-55-68 Fax : +33-1-55-68-57-57
Czech Republic	MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch Avenir Business Park, Radlicka 751/113e, 158 00 Praha5, Czech Republic	Tel : +420-251-551-470 Fax : +420-251-551-471
Poland	MITSUBISHI ELECTRIC EUROPE B.V. Polish Branch ul. Krakowska 50, 32-083 Balice, Poland	Tel : +48-12-630-47-00 Fax : +48-12-630-47-01
Sweden	MITSUBISHI ELECTRIC EUROPE B.V. (Scandinavia) Fjelievägen 8, SE-22736 Lund, Sweden	Tel : +46-8-625-10-00 Fax : +46-46-39-70-18
Russia	MITSUBISHI ELECTRIC EUROPE B.V. Russian Branch St. Petersburg office Piskarevsky pr. 2, bld 2, lit "Sch", BC "Benua", office 720; RU-195027 St. Petersburg, Russia	Tel : +7-812-633-3497 Fax : +7-812-633-3499
Turkey	MITSUBISHI ELECTRIC TURKEY A. Ş Ümraniye Branch Serifali Mahallesi Nutuk Sokak No:5, TR-34775 Umraniye, Istanbul, Turkey	Tel : +90-216-526-3990 Fax : +90 -216-526-3995
Dubai	MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716 Fax : +971-4-3724721
South Africa	ADROIT TECHNOLOGIES 20 Waterford Office Park, 189 Witkoppen Road, Fourways, Johannesburg, South Africa	Tel : +27-11-658-8100 Fax : +27-11-658-8101
China	MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD. No.1386 Hongqiao Road, Mitsubishi Electric Automation Center, Shanghai, China	Tel : +86-21-2322-3030 Fax : +86-21-2322-3000
Taiwan	SETSUYO ENTERPRISE CO., LTD. 6F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan, R.O.C.	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. 7F-9F, Gangseo Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 157-801, Korea	Tel : +82-2-3660-9530 Fax : +82-2-3664-8372
Singapore	MITSUBISHI ELECTRIC ASIA PTE. LTD. 307, Alexandra Road, Mitsubishi Electric Building, Singapore 159943	Tel : +65-6473-2308 Fax : +65-6476-7439
Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522 Fax : +66-2682-6020
Vietnam	MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED Hanoi Branch 6-Floor, Detech Tower, 8 Ton That Thuyet Street, My Dinh 2 Ward, Nam Tu Liem District, Hanoi, Vietnam	Tel : +84-4-3937-8075 Fax : +84-4-3937-8076
Indonesia	PT. MITSUBISHI ELECTRIC INDONESIA Gedung Jaya 11th Floor, JL. MH. Thamrin No.12, Jakarta Pusat 10340, Indonesia	Tel : +62-21-3192-6461 Fax : +62-21-3192-3942
India	MITSUBISHI ELECTRIC INDIA PVT. LTD. Pune Branch Emerald House, EL-3, J Block, M.I.D.C Bhosari, Pune-411026, Maharashtra, India	Tel : +91-20-2710-2000 Fax : +91-20-2710-2100
Australia	MITSUBISHI ELECTRIC AUSTRALIA PTY. LTD. 348 Victoria Road, P.O. Box 11, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO 14001 (standards for environmental management systems) and ISO 9001(standards for quality assurance management systems)

EC97J1113 051 008

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI 5, HIGASHI-KU, NAGOYA, JAPAN

L(NA)08147ENG-B 1010(KWIX)

New publication effective Oct. 2010.
Specifications subject to change without notice.